



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,123	07/02/2003	Omid Mahdavi	TI-35198	3930
23494	7590	06/01/2006		
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265				
EXAMINER LUND, JEFFRIE ROBERT				
ART UNIT		PAPER NUMBER		
1763				

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/612,123

Applicant(s)

MAHDAVI, OMID

Examiner

Jeffrie R. Lund

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 12-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 23-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 23-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 23 recites the limitation "the at least one of nickel chromium (NiCr)" in 5.

There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 6-8, 10, 11, and 23-26 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Moise et al, US Patent 6,211,035 B1.

Moise et al teaches a plasma etcher (Figure 1a) for etching a substrate having a resistor material layer formed of NiCr (column 8 lines 54-59) for a thin film resistor. The plasma etcher: uses a plasma etch chemistry that includes a mixture of Cl<sub>2</sub> and BCl<sub>3</sub> (column 16 lines 23 and 24); a low pressure environment of 10 mTorr (figure 1a); a power level of 0-1500 watts (figure 1a); and an end point detector (figure 1a). The

Art Unit: 1763

specific emission monitored is an intended use of the apparatus. The end point detector of Moise et al inherently detects emissions including chromium. The specific substrate etched, the gases supplied, the operating pressure, and power level are intended uses of the apparatus of Moise et al, and the apparatus of Moise et al is capable of etching the claimed material with the claimed materials.

Alternately, it would be obvious to one of ordinary skill in the art at the time the invention was made to supply the  $\text{Cl}_2$  and  $\text{BCl}_3$  at a desired ratio, and to etch a substrate having a resistor material layer formed of NiCrAl. The motivation to supply the desired ratio of  $\text{Cl}_2$  and  $\text{BCl}_3$  is to optimize the plasma etch chemistry. The motivation for etching a substrate having a resistive layer of NiCrAl is to form a thin film resistor.

5. Claims 1-8, and 23-25 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ohkawa et al, US Patent 6,375,860 B1.

Ohkawa et al teaches a plasma etcher 30 for etching a substrate. The plasma etcher includes: a magnetically enhanced environment with a magnetic field strength of 5-500 gauss (column 8 lines 1-3); a low pressure environment of 1 mTorr to 1 Torr (column 9 lines 10-12); and a power level of 5-5000 watts (column 9 lines 30-35). (Entire document) The apparatus of Ohkawa et al is capable of supplying a plasma etch chemistry that includes a mixture of  $\text{Cl}_2$  and  $\text{BCl}_3$  at a desired ratio, and etching a substrate having a resistor material layer formed of NiCrAl for a thin film resistor.

Alternately, it would be obvious to one of ordinary skill in the art at the time the invention was made to supply  $\text{Cl}_2$  and  $\text{BCl}_3$  at a desired ratio to etch a substrate having

Art Unit: 1763

a resistor material layer formed of NiCrAl. The motivation to supply the desired ratio of  $\text{Cl}_2$  and  $\text{BCl}_3$  is to optimize the plasma etch chemistry to etch the NiCrAl layer to form a thin film resistor or other micro device.

6. Claims 1-7, 9 and 23-25 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Masuda et al, US Patent 6,171,438 B1.

Masuda et al teaches a plasma etcher 100 for etching a substrate W that includes; walls 102 with a temperature set between 20°C and 80°C (column 7 lines 23-43); and an anode and cathode 111, 130 with the temperature of the anode or cathode 130 set to 80°C (column 3 lines 56-65). The plasma etcher includes: a magnetically enhanced environment with a magnetic field generated by coils 101A-101C, and a low pressure environment of 0.1 Pa to 10 Pa (7.5 mTorr to 75 mTorr (column 4 lines 30-32). (Entire document, specifically Figure 1) The apparatus of Masuda et al is capable of supplying a plasma etch chemistry that includes a mixture of  $\text{Cl}_2$  and  $\text{BCl}_3$  at a desired ratio, etching a substrate having a resistor material layer formed of NiCrAl for a thin film resistor, and applying a magnetic field of 45-55 Gauss.

Alternately, it would be obvious to one of ordinary skill in the art at the time the invention was made to supply  $\text{Cl}_2$  and  $\text{BCl}_3$  at a desired ratio to etch a substrate having a resistor material layer formed of NiCrAl. The motivation to supply the desired ratio of  $\text{Cl}_2$  and  $\text{BCl}_3$  is to optimize the plasma etch chemistry to etch the NiCrAl layer to form a thin film resistor or other micro device.

7. The Examiner notes that:

a. "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). (See MPEP 2115) The material or article worked on, i.e. the substrate having a resistor layer formed of NiCrAl etched in the etching chamber, does not impart patentability to the claims.

b. "Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus " if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). (Also see MPEP 2114) The specific limitations of processing gas ( $CL_2$ ,  $BCl_3$ ), the ratios of the processing gases, strength of the magnetic field, pressure of the processing chamber, power applied to the plasma, the temperature of the anode or cathode and walls of the processing chamber, and the spectral emission monitored are all functions and

manner in which the apparatus is employed, and therefore do not distinguish or differentiate the claimed invention from the prior art. All the above references have the claimed structure, and are capable of functioning as claimed.

### ***Response to Arguments***

8. Applicant's arguments filed March 20, 2006 have been fully considered but they are not persuasive.

In regard to the argument that the cited references do not teach that "the resistor material layer formed from nickel chromium aluminum", the Examiner agrees. However, as discussed above, the material worked on by the etching chamber does not limit the etching chamber.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later

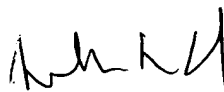
Art Unit: 1763

than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jeffrie R. Lund  
Primary Examiner  
Art Unit 1763

JRL  
5/30/06